Food Processing Engineering

CHE- 449	Food Processing Engineering	2CH Theory (2)	
Pre- req.	Nil	Category	Elective

Course Contents as per PEC Guidelines 2023-2024

Introduction to Food Science: Evolution of Food Processing and Preservation: Factors affecting food supply and processing, impact of inventions and scientific discoveries.

Methods and Techniques: Used to transform raw ingredients into food for human consumption. Principles of operation and design of industrial equipment used in food processing, storage, and packaging.

Food Supplements: Related to food quality and safety as influenced by food processing equipment.

Classification and Description: Of food processing equipment, including the role of colors, flavors, and preservatives.

Engineering Principles in Food Processing and laboratory experiments provide hands-on experience using state-of-the-art equipment to understand engineering principles related to food processing and preservation, as taught in lectures.

Physical Properties of Food Materials: Mechanical Properties: Water activity, reaction kinetics, and elements of process control.

Size Reduction: Techniques and applications in food processing.

Food Security: Introduction and History: Concepts of food security and associated risks.

Risk Management: The precautionary principle, food risk management, and communication, including quantitative risk assessment.

Biological Contaminants: Bacteria, Viruses, and Parasites: Their impact on food safety and related preventive measures.

Chemical Contaminants: Fungicides, Pesticides, and Herbicides: Risks associated with agricultural and veterinary chemicals.

Natural Toxins: Sources and mitigation strategies. **Food Allergy: Introduction:** Basics of food allergies, including genetic factors.

Common allergens include milk, peanuts, soy, and tree nuts.

Week /Lecture	Topic
1	**Introduction to Food Science: Evolution of Food Processing and Preservation:** Factors affecting food supply and processing, impact of inventions and scientific discoveries.
2-3	**Methods and Techniques:** Used to transform raw ingredients into food for human consumption. Principles of operation and design of industrial equipment used in food processing, storage, and packaging.
4	**Food Supplements:** Related to food quality and safety as influenced by food processing equipment.
5	**Classification and Description:** Of food processing equipment, including the role of colors, flavors, and preservatives.
6	**Engineering Principles in Food Processing and Preservation**
7-8	**Physical Properties of Food Materials: Mechanical Properties:** Water activity, reaction kinetics, and elements of process control. **Size Reduction:** Techniques and applications in food processing.

9	**MID TERM EXAM**
10	**Food Security: Introduction and History:** Concepts of food security and associated risks.
11	**Risk Management:** The precautionary principle, food risk management, and communication, including quantitative risk assessment.
12	**Biological Contaminants: Bacteria, Viruses, and Parasites:** Their impact on food safety and related preventive measures.
13	**Chemical Contaminants: Fungicides, Pesticides, and Herbicides:** Risks associated with agricultural and veterinary chemicals.
14	**Natural Toxins:** Sources and mitigation strategies.
15-16	**Food Allergy: Introduction:** Basics of food allergies, including genetic factors. Common allergens include milk, peanuts, soy, and tree nuts.
17	Revision
18	End Semester Exam

TEXT AND REFERENCE BOOKS:

- Ian C. Shaw," Food Safety: The Science of Keeping Food Safe",2nd edition,2018
- Zeki Berk "Food Process Engineering and Technology",2009 Elsevier Inc.
- Geoffrey Campbell-Platt,"Food Science and Technology", John Wiley & Sons,26-Aug-2011
- Norman N.Potter, "Food Science" Springer Netherlands, 26-Nov-2012